



# STATE WATER PLAN ASSISTANCE: A Screening Tool for Assessing Pennsylvania Water Resources

Cooperator :  
Pennsylvania Department of  
Environmental Protection

# Pennsylvania Water Resources Planning Act (Act 220)

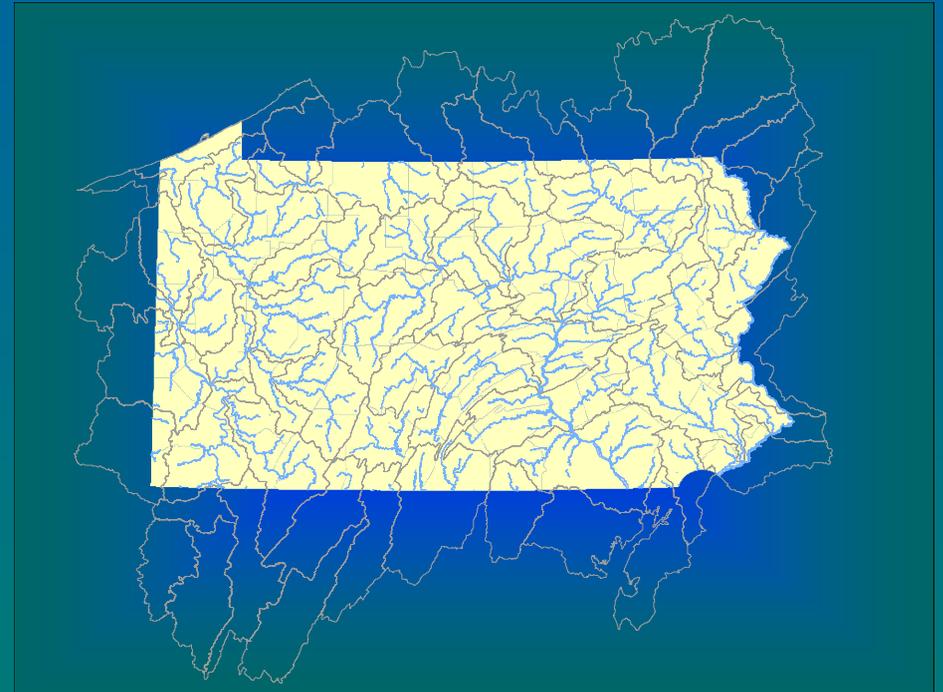
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- Pennsylvania Department of Environmental Protection (PaDEP) is the lead agency
- Tasks include:
  - Update State Water Plan within 5 years and updates every 5 years thereafter
    - ◆ Assess surface and groundwater resources
    - ◆ Assess existing and projected water use
    - ◆ Identify critical water planning areas
    - ◆ Create critical area resource plans

# Screening Tool Objectives

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- Develop a screening tool to evaluate statewide surface- and ground-water resources on a watershed basis
- Provide PaDEP managers with the interactive capability to generate and evaluate what-if scenarios of planned or requested water uses.



# Screening Tool Capabilities

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The Screening Tool helps to answer:

- ◆ How much surface and ground water do we have?
- ◆ How much do we use?
- ◆ What is the difference between what we have and what we use?
- ◆ How much water is available?
- ◆ Where is water use exceeding availability?
- ◆ Where is water use getting close to availability?

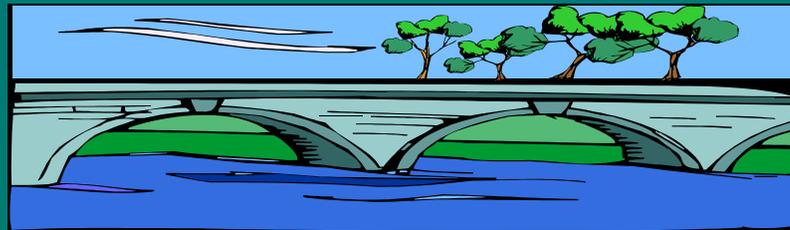


# Screening Tool Capabilities

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## Surface Water “Availability”

- Determined by streamflow statistics and net water use within a basin
  - ◆ Simplified water budget:  
$$\text{Surface water availability} = \text{streamflow statistic} - \text{withdrawals} + \text{discharges}$$
- 7-Day, 10-Year low-flow statistic determined from regional regression equations



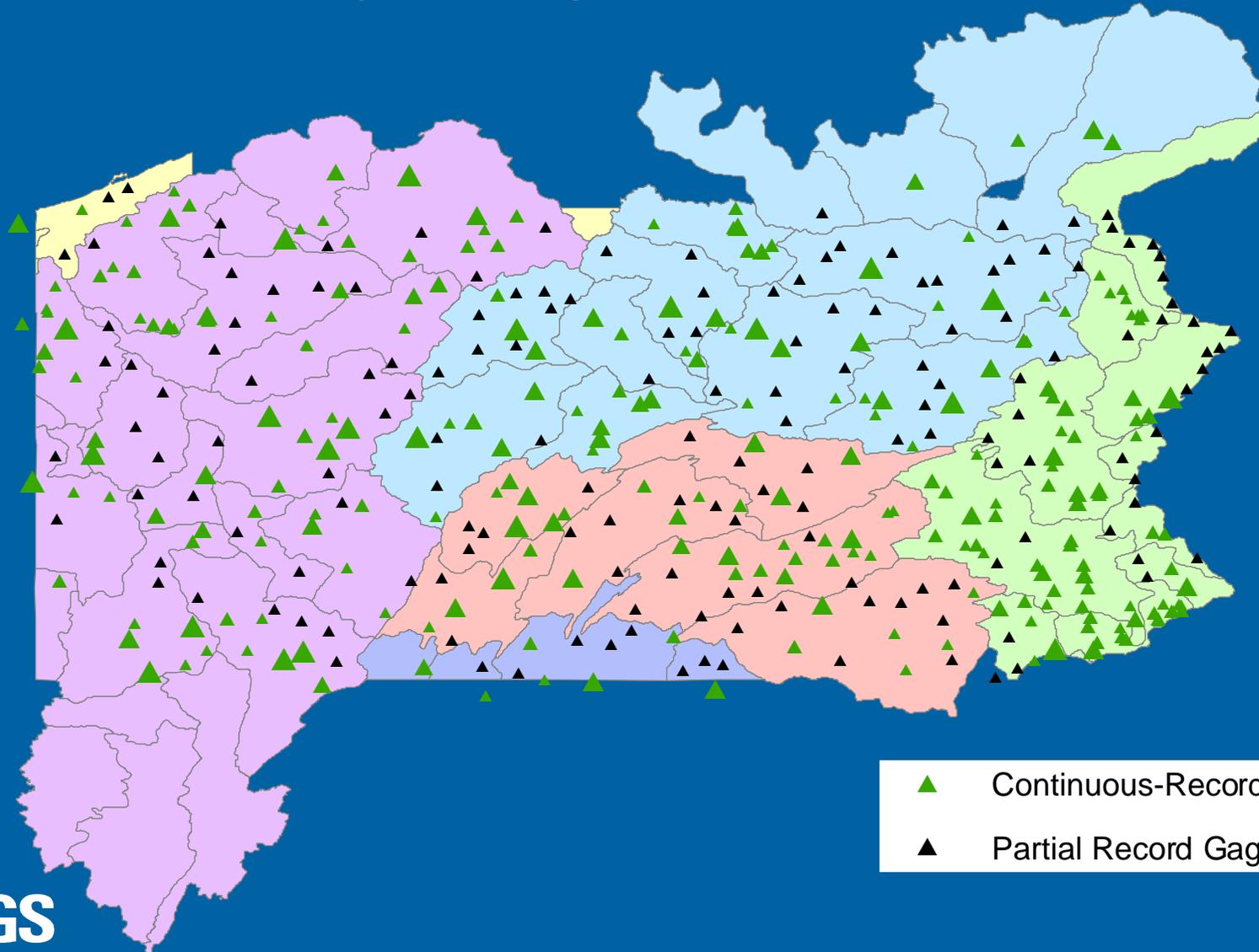
# Screening Tool Development

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## 3 Major Components:

- Hydrologic, statistical, and water-use data
  - ◆ Development of regression equations
  - ◆ Compilation of water use data
- Spatial data elements for geographic analysis
  - ◆ GIS data preparation
- User system to access the water-planning information
  - ◆ Desktop application
  - ◆ Web application

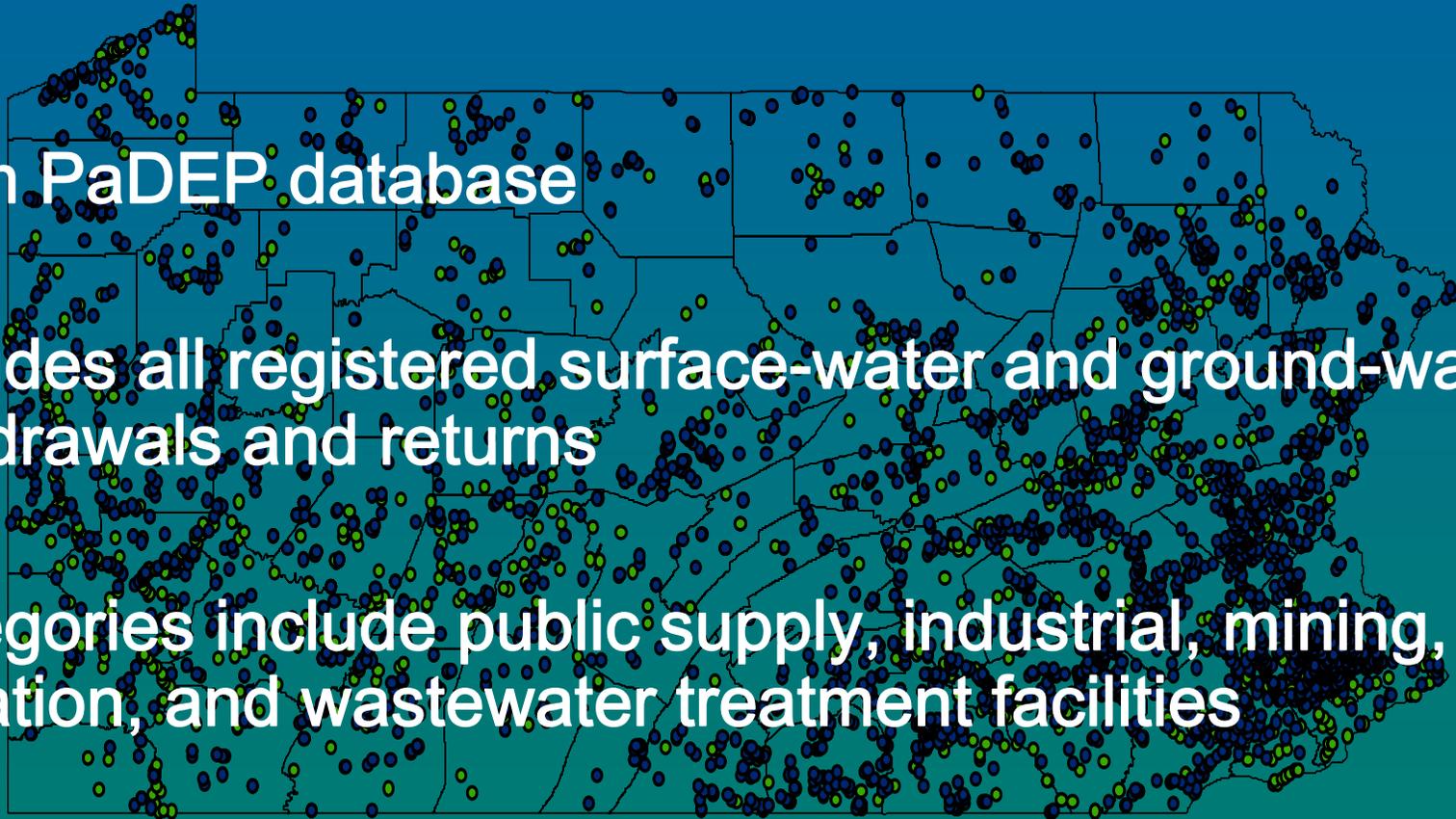
# Screening Tool Development: Hydrologic Data



# Screening Tool Development: Water-Use Data

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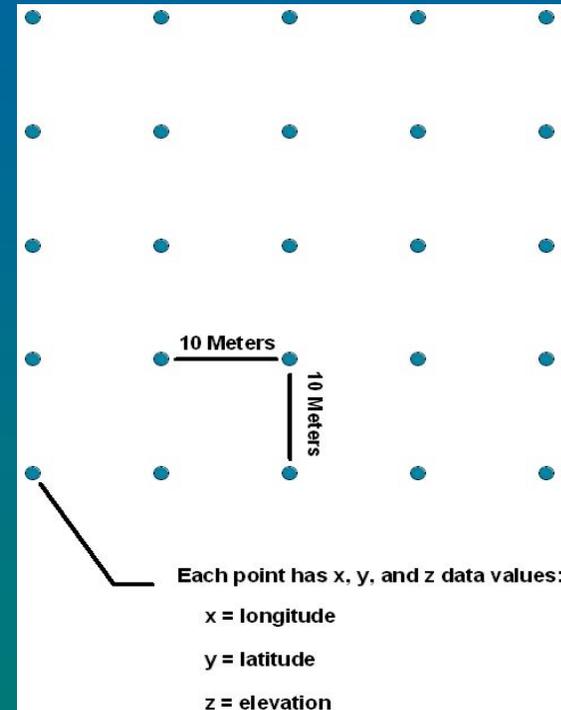
- From PaDEP database
- Includes all registered surface-water and ground-water withdrawals and returns
- Categories include public supply, industrial, mining, irrigation, and wastewater treatment facilities



# Screening Tool Development: Spatial Data Analysis

## GIS data preparation

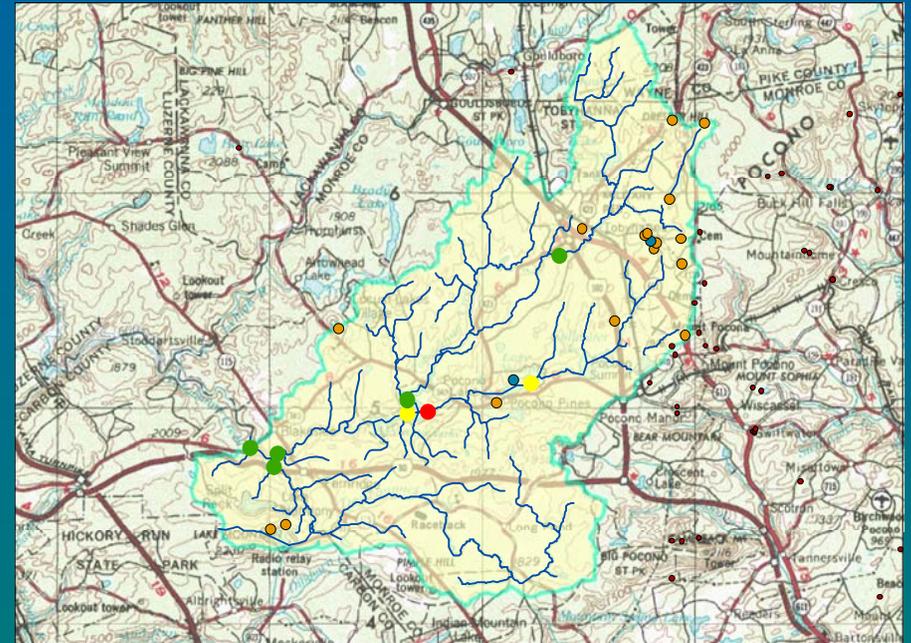
- Started from 30-meter national elevation dataset
- Through GIS processing, developed 10-meter hydrologically enforced digital elevation model



10-meter elevation grid

# Screening Tool Development: User System

- Provide flow statistics, water-use totals, and water availability at pour points
- Approximate statewide total of 10,000+ pour points
- Pour Points will be colored to indicate water availability
- PaDEP managers will be able to edit water use at pour points



**Surface-Water  
Availability 7Q10 Statistic**

- Normal
- Potentially Stressed
- Stressed

# Screening Tool Development: User System

## Edit Pour Point tool

**UserForm1**

Pour Point ID - Stream Name: 7548 - Lehigh River

Drainage Area: 584.52 SQMI

Withdrawals: 13.18 MGD

Discharges: 0.318 MGD

Surface Water Resources: 64.064 MGD

SW Net: 51.202 MGD

Total number of water use sites: 206

Close Form

Water use totals are taken from the WUDS data only. They do not take into account any edits made in the Pour Points.

**Edit Pour Point Data**

**SUPPLY** units in MGD

SW as 7Q10	Net SW Balance	Total Withdrawals
64.064	51.202	13.18

Point ID: 7548-Lehigh River

Drainage Area in sq. mi.: 584.52

Total Discharges: 0.318

Edit either Total or Categories:

Total  
 Categories

Show All Edited Data in Grid

**DEMAND**

Irrigation	Public Supply	Industrial
0.056	11.704	0.348
S.Treatment	Mining	Power Plant
0.	0.042	1.03

Previously Edited

Save Values Close Window

Reset Values to Original

**Reload Existing Scenario**

Select existing scenario, then click this button:

jeff1

## Save and Recall Scenarios

**ArcMap**

Please enter Scenario Name, up to 255 characters:

OK Cancel

## Show Basin tool



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